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THE PLANT DISEASE REPORTER

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. The reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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DEFOLIATION AND CROP LOSS

K. Starr Chester

Measurement of crop yield reduction following artificial defoliation is a useful way of obtaining evidence of the extent of losses sustained by crops that have lost foliage as a result of disease or insect attack. In cases in which yield reduction due to artificial defoliation is compared with that due to disease, e.g. leaf rusts, it has been found that the two types of injury have comparable yield-depressive effects (Anon. 1933, 1934, 1936) or, if there is a difference, the disease reduces the yields more than an equal amount of artificial defoliation (Shevchenko, 1933: Caldwell and Compton, 1939). Therefore, the losses caused by artificial defoliation give a conservative measure of those due to defoliation diseases, and one that is readily and accurately obtainable.

Artificial defoliation experiments have received attention in studies of hail injury and of the effects of pasturing of small grains, but, except in connection with the leaf rusts, they have not been put to good use in providing a basis for disease-loss estimates. This article is designed to contribute to the methodology of plant disease surveying by comparing the results of leaf clipping experiments with various crops, drawing certain conclusions which appear to have general application to the estimation of losses caused by defoliation diseases, and suggesting more extensive studies of this sort in plant disease survey research.

The literature contains reports of artificial defoliation experiments with wheat, oats, barley, corn, flax, and onions. The data from these reports have been recalculated on a uniform basis and are presented graphically in Figure 1. The figure also includes the results of a preliminary leaf clipping experiment with sorghum, based on unpublished data supplied by D. E. Hoffmaster, and J. B. Sieglinger, of the Oklahoma Agricultural Experiment Station. This last was too limited in scope to have more than orientative value but it shows trends entirely comparable to those of the experiments with other crops.

Figure 1 shows the percentage decreases in yields resulting from partial or complete artificial defoliation at different stages of maturity of the experimental plants. An Explanation of these growth stages accompanies the figure.

In all cases the loss of the foliage in midseason resulted in very marked yield depression, ranging from a maximum of 37 percent in the case of flax to 99 percent in that of corn. If we arbitrarily select 20 percent loss as a serious one demanding preventive measures, we find that this amount of loss, or much more, is registered if any of these crops is totally defoliated at any time during the greater part of its life; or even if partially defoliated during midseason. Wheat, for example, shows a yield reduction of 20 to 28 percent if it loses 1/4 of its functioning leaves at any time between rosette and boot stages. Here is an object lesson worthy of the most serious attention of any phytopathologist (and we are decidedly in the majority) who has appraised a crop in midseason, found as much as 25 percent of the leaf areas occupied by leaf spot diseases or a comparable amount of fallen leaves, and recorded the damage as "negligible", "trace", or even a few percent.

Secondly, we see a regular proportionality between the amount of loss and the fraction of foliage removed. With each increment in loss of leaf

tissue there is an increment in crop loss. This indicates that even moderate losses of foliage have yield significance, and that a control measure which reduces leaf disease without eliminating it has decided value in control programs.

In the third place, it is seen that yield reduction due to defoliation is greatest when the leaves are removed at some stage near the middle of the life of the plant, and becomes progressively less if the leaves are removed proportionately earlier or later in life. Thus, the maximum yield-depressive effect was seen when corn was defoliated in the tasseling stage, wheat, oats, and barley in the rosette stage, onions as they began to bulb, flax in the bud stage, and sorghum as it developed its full complement of leaves.

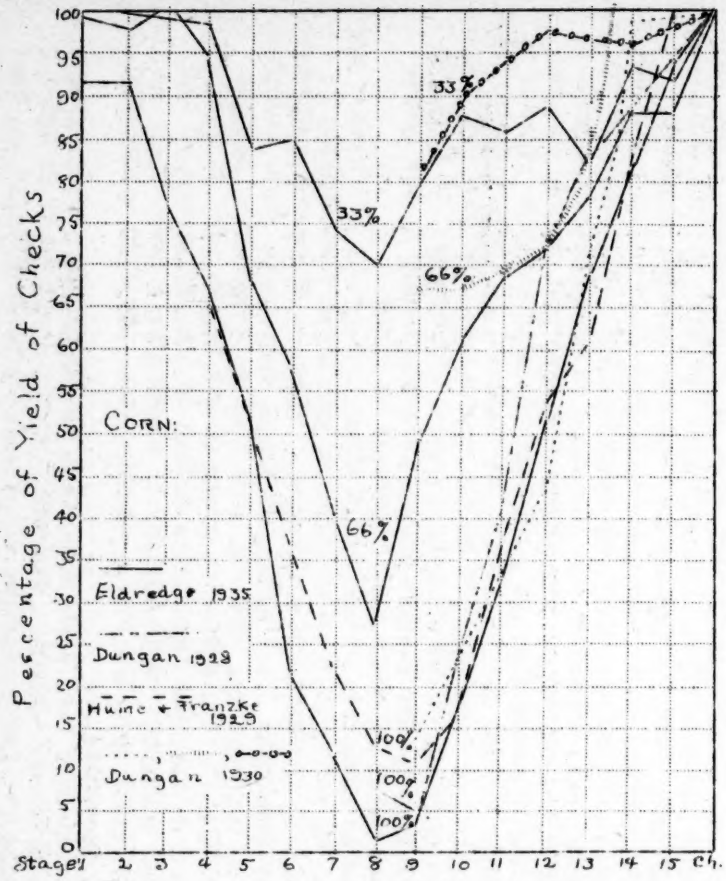
Wheat appears to be exceptional in that the loss does not decrease as we pass to defoliation in early stages of growth. However, in this case the experiments have not been begun early enough to show this effect. Actually, wheat plants completely defoliated in the seedling stage later replace their leaves and develop in fairly normal fashion. Pasturing practices also bear this out. The graphs shown for wheat cover only the growth period after the time of maximum loss from defoliation, corresponding to the period after growth stage "8" in corn.

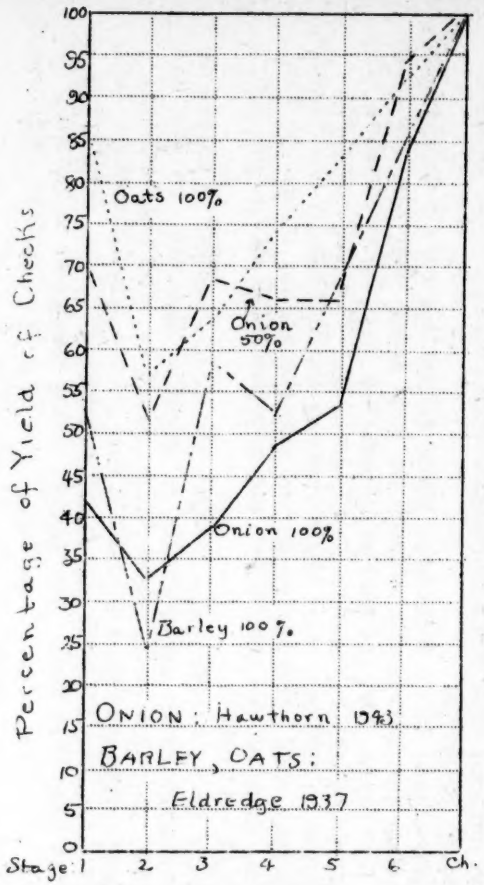
The reason advanced for the greatest loss from defoliation in midseason is that in very early stages of growth the leaves removed are replaced by others, which permit the plant to make fairly normal growth, while the leaves removed as the plant approaches maturity have largely outlived their usefulness. Thus it is in midseason, when the removed leaves cannot be replaced and when their photosynthetic activity is most essential to storage of food, that defoliation has the most harmful results.

Here we have another point that appears to have been largely overlooked in disease-loss estimation. Many phytopathologists (again we are probably in the majority) have tended to fix attention on defoliation diseases as the crop approaches maturity. The graphs indicate that in our so doing, we may have been disregarding the period of the most decisive effects of these diseases. In the case of wheat, for example, Septoria tritici Desm. has been regarded as a pathogen of little consequence and has hardly been considered in programs of breeding for disease resistance, yet Septoria destroys much leaf tissue and its attack is concentrated at the growth stage in which defoliation is most injurious to yield.

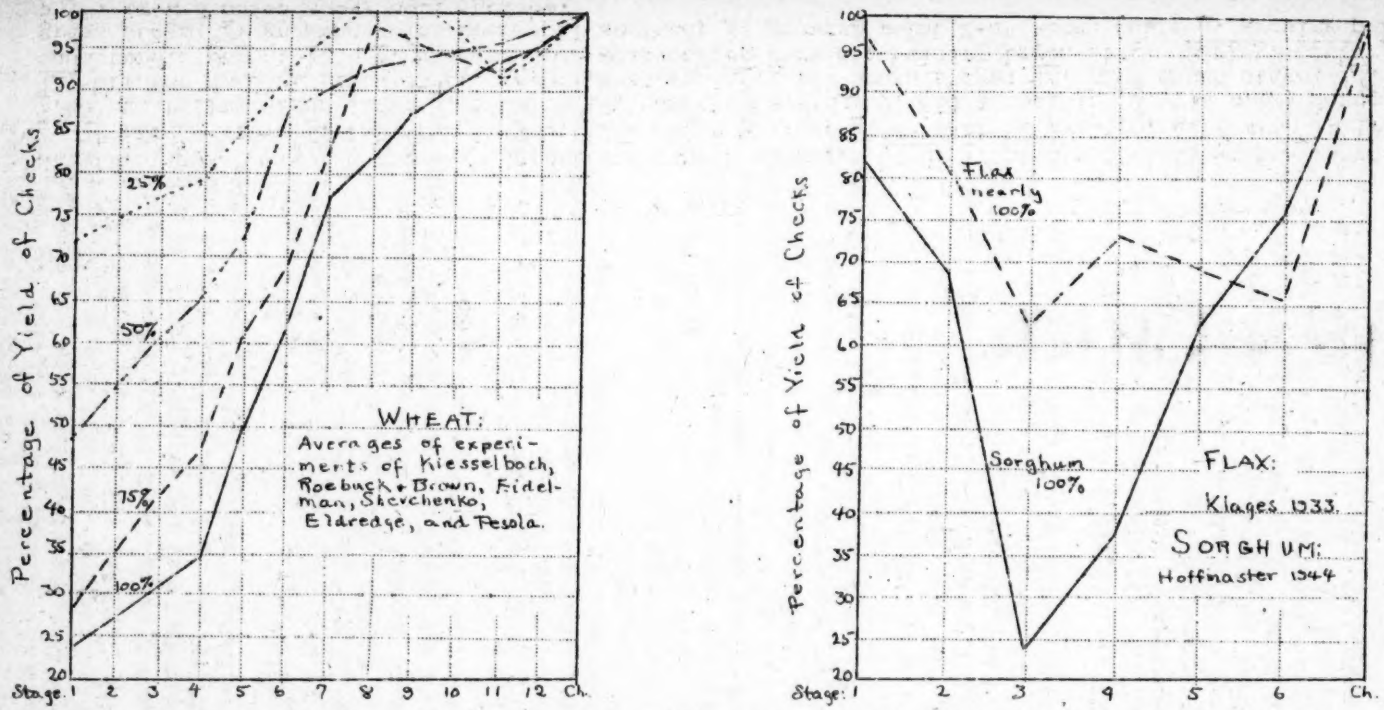
The comparable character of the defoliation-loss graphs of these 7 crops suggests that we are dealing with a general principle that applies to many crops and their defoliation diseases. There is clear-cut indication, however, that different crops suffer different degrees of yield reduction as a result of defoliation. This is seen when we compare the maximum crop losses shown for the different crops in the figure, and it is to be expected, when we consider that crops differ in the efficiency of their photosynthetic activity, their ability to regenerate leaves, their use of other tissues (leaf sheaths, stems, glumes, awns, etc.) for photosynthesis, and in other respects.

The Russian workers have also shown that the same crop suffers from defoliation to different extents, depending on the environment in which it is grown. Lubimenko (1933) defines the "coefficient of damage" as "that factor by which it is necessary to multiply the degree of damage to the vegetative organs in order to obtain the actual effect of the damage, i.e. the amount of loss in quantity and quality of the yield." Eidelman (1933a)





Growth Stages: All plants, ch = unmutilated check plants. Corn: 1, plants 5" tall with 4 leaves; 2, 7" with 5 lvs.; 3, 14" with 7 lvs.; 4, 2' with 9 lvs.; 5, 3' with 11 lvs.; 6, 4.5' with 13 lvs.; 7, 6' with first tasseling; 8, 8' with 40% tassels showing; 9, 85% tasseled; 10, 75% silks dead; 11, blister to early milk stage; 12, milk stage; 13, soft dough stage; 14, hard dough stage; 15, submature. Onion: 1 to 6, 6 weeks to 1 week before harvest; bulbing began at 2. Barley, Oats: 1, grass stage; 2, growing point near soil surface; 3, growing point 2-4" above soil; 4, growing point 6-9", or 2-3 nodes above soil surface.



Growth Stages: all plants, ch = unmutilated check plants. Wheat: 1, rosette stage; 2, 9" high; 3, 20" high; 4, boot stage; 5, heading; 6, blossoming; 8, milk stage; 9-10, soft dough stage; 11-12, hard dough stage. Flax: 1, 6" height; 2, 9" height; 3, bud stage; 4, full bloom; 5, soft dough stage; 6, hard dough stage. Sorghum: 1, June 22; 2, July 12; (maximum leaf development July 16); 4, July 21; 5, Aug. 1; 6, Aug. 11, 1944

Figure 1. Effect of Artificial Defoliation in Reducing Yields of Corn, Wheat, Barley, Oats, Onion, Sorghum, and Flax. "33⅓" = 1/3 of leaves removed, etc.

has computed the coefficient of damage for 100 percent defoliation of spring wheat at .24-.28 at Kiev and .48-.69 at Leningrad, i.e. the yield reduction from the same degree of injury was much greater at Leningrad. This is interpreted as meaning that at Kiev the wheat had a greater capacity for compensating for deficient leaf tissue through increased activity of the remaining tissues. Eidelman (1933b) has shown that wheat leaves normally are not used at full efficiency, and that removing some of them increases the photosynthetic activity of the remaining ones (although not enough to compensate fully for the cutting). Evidently this property varies with environment. According to Eidelman the different leaves of the wheat plant have different coefficients of damage, i.e. differ in their importance in contributing to the yield, the uppermost two being most important.

Finally, it should be mentioned that the yield depressions associated with loss of foliage are even greater than indicated by the graphs when we take quality as well as quantity of harvest into consideration. Thus, Dungan showed that corn from defoliated plants was more floury, chaffy, and lower in test weight than that from unmutilated plants. In onions defoliation resulted in a higher proportion of boilers and culls, as compared with the jumbo and medium grades. With wheat, artificial defoliation has results comparable to those due to leaf rust. The grain contains less protein and sugars, the 1000-kernel weight and bushel weight are reduced, and the flour is of lowered quality as shown by time-test value and loaf volume of bread and cakes. There is also a significant lowering in the yields of straw and chaff (Anon. 1932, 1933, 1934, 1936; Eidelman 1933a,b; Shevchenko, 1933; Telechko and Siryachenko, 1933; Caldwell and Compton, 1939). Leaf clipping may delay the date of maturity by 10 days, according to Eidelman, and this can result in serious damage from late-season weather, diseases, and insects.

The foliage-yield relationship is not entirely a direct one. Reduction in leaf area, for example, leads to a reduction in root development, and in turn a reduction in water intake, which is reflected in further loss in quantity and quality of yield than that due directly to lowering of photosynthetic activity.

Contrary to opinions sometimes expressed, the figure gives little indication that defoliation at any stage of development of the crop results in significant increases in yields, as compared with unmutilated plants. Exceptions are Eldredge's report (1935) that reduction of leaf area may somewhat increase yields of corn under severe drought conditions, and cases in which the crop is not at a critical stage of plant growth, when a minor degree of defoliation may be associated with a slight yield increase.

In summary, it has been pointed out that defoliation results in reductions in quantity and quality of crop yields greater than are generally recognized, that the maximum yield loss follows defoliation in midseason, and not as the crop approaches maturity when defoliation diseases are generally noticed, that there is a regular relationship between proportion of foliage removed and yield reduction, and that the defoliation-yield relationship varies with different crops and with the same crop in different environments. Experiments on artificial defoliation give a conservative measure of the crop loss resulting from defoliation diseases and are recommended for more common use as a tool contributing to greater accuracy in plant disease surveying.

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OKLAHOMA AGRICULTURAL EXPERIMENT STATION, STILLWATER, OKLAHOMA

GREENHOUSE AND COLDFRAME VEGETABLE DISEASES IN NORTHERN NEW JERSEY

A. J. Mix

A second visit was made to northern New Jersey vegetable growers January 31 to February 2. Severe cold weather had prevailed since the preceding visit (see preceding issue PDR, page 153); plants under sash had grown very little. In a number of cases it was impossible to examine the plants and reliance had to be placed on the grower's opinion as to the continuance of disease. Visits to greenhouses were made on this trip, but only one grower had done any planting.

Damping off (Rhizoctonia sp.) of lettuce was found to be continuing and causing moderate damage at farms no. 3, 4, 5, and 17. It was still causing serious loss at farms no. 18 and 19. No new locations for this disease were found but because of the prolonged period without sufficient aeration of the frames some are to be expected.

Damping off of cauliflower (Rhizoctonia sp.) had continued at farm no. 16, but was moderate in amount. Lettuce drop (Sclerotinia sclerotiorum), though still present at farms no. 2 and 3, had undergone little further spread. Drop (S. minor) of Romaine seedlings ready for transplanting was observed in a small propagating house at farm no. 18. Conditions of air, temperature, and sunlight were good but the seedlings were thickly crowded in the flats. As indicated in the previous report, the soil (untreated, and obtained from a vegetable field) may be badly infested. Drop (S. minor) of cauliflower was still present where previously observed on this farm.

Downy mildew (Peronospora parasitica) of cauliflower had increased at farm no. 17. All leaves of all plants show numerous mildew-spots and the oldest leaves are heavily infected. Spraying is not possible under present conditions and the grower is inclined to rely on the effect of aeration when the weather improves. From the growers' account the same disease is suspected at farm no. 3, but examination of the plants could not be made.

Nothing further was learned about the lettuce-seedling injury at farm no. 12, except that it was still present. In the specimens obtained lateral roots as well as the main roots were diseased and a fungus (apparently the same as that previously observed) was present in all cases.

Seedlings (chiefly cabbage) were just up in the greenhouse at farm no. 6. Fresh soil (not sterilized) mixed with manure and worked into a good state of tilth had been used. The seed had been sown thickly in flats and a layer of sand added. No disease was evident.
EMERGENCY PLANT DISEASE PREVENTION PROJECT

SPINACH DISEASES AND PESTS IN ARKANSAS

Howard W. Larsh and J. R. Shay

In recent years spinach has become one of the leading truck crops in Arkansas. Spinach production for commercial purposes has expanded greatly since the beginning of the current war. According to the Arkansas Bureau of Crop Statistics, an estimated 900 acres were seeded to spinach in 1940. In 1944 approximately 10,700 acres were grown. The value of the 1943 crop was approximately $1,500,000, and it is estimated that 2,000 more acres were sown in 1944 than in 1943. The largest producing area in the State is centered in the upper Arkansas River Valley region extending from Fort Smith to the Little Rock area. Another producing area with considerable acreage is established in the Mississippi Delta, centered around Osceola in the northeastern part and Helena in the east-central part of the State. Small acreages are grown in the valleys of the St. Francis and Black Rivers in the northeastern section and in the Red River Valley in southwestern Arkansas. Spinach is grown on a wide variety of soils, producing its best yields on soils that are high in productivity.

There are 4 rather well-defined periods when spinach is planted: (1) In late August or during the month of September. This planting is considered hazardous by the growers because weeds and diseases may reduce or even destroy the crop. Usually this planting is harvested during the month of November. (2) In October. This is a more dependable crop than no. 1 since frosts usually reduce the agencies responsible for losses in the earlier plantings. Harvest is made in December. Certain growers harvest only the older leaves and permit the crowns to overwinter to develop another crop which is cut in late January or early February if damage from winter injury has not been severe. (3) During the month of November. This crop overwinters and is harvested in February and early March. (4) During February and early March. Harvest of this crop takes place in April and May.

The greater part of the spinach in all the crops is sown broadcast, although drilled and raised beds are frequently seen. Approximately nine-tenths of the spinach harvested is used for processing and the remainder is placed on the market as fresh spinach. The variety most commonly used by growers was found to be Bloomsdale (blight-susceptible types) but certain growers are turning to Old Dominion and to Virginia Savoy to reduce losses from spinach blight. The size of plantings most frequently encountered ranged from 40 to 80 acres. Some producers, however, have as little as 4 acres and others as much as 600 to 700 acres.

Growers who have been producing spinach since its introduction into the State can recall when a crop could be produced without a blemished leaf. This is not the case at the present time as there are many diseases and insects that cause heavy losses in this region.

Diseases and Pests of Spring-Planted Spinach

The following diseases and pests were observed during the latter part of March 1944 on spring-planted spinach.

Downy Mildew (Peronospora effusa) was well-established in the Arkansas River Valley during this period. Considerable loss was sustained in a large planting near Little Rock (Pulaski County), in which high relative humidity and moderate temperatures had so favored the development and dissemination of the pathogen that the grower was unable to harvest marketable spinach.

Pin Head Rust (Heterosporium variabile) was more prevalent and destructive during the early spring than was downy mildew. Spinach plants in a low state of vigor were severely affected. Many of the leaves were so severely infected that yellowing and slight defoliation resulted. With the return of climatic conditions more favorable for the development and growth of spinach, the newly developed leaves were free from leaf spot.

Blight (Cucumber mosaic virus) was the most prevalent and destructive disease observed during the early growing season of 1944. Very few fields if any, were absolutely free from plants infected by the virus. One grower in Crawford County plowed up approximately 200 acres of Nobel spinach because such a high percentage of plants were killed or rendered worthless from the virus that harvest would not have been profitable. Varietal trials conducted in the spring of 1944 in Crawford County demonstrated the definite resistance of the Old Dominion and Virginia Savoy varieties to the virus. Eleven different varieties were planted in 3 blocks with block No. 2 separated approximately 150 yards from No. 1, and No. 3 situated approximately 1/2 mile west of blocks No. 1 and No. 2. Susceptible varieties in block No. 1 were completely destroyed by spinach blight while only a trace of the plants were affected in the 2 resistant varieties. In block No. 2 damage was less severe with approximately 60% of the plants killed in the susceptible varieties. Observations in nearby fields planted to the susceptible Nobel variety showed similar differences in the amount of virus infection among fields and among given areas within a field.

Several insects were observed causing damage to various plantings. The most numerous were aphids, 12-spotted cucumber beetles, tarnished plant bugs, and leafhoppers.

Diseases and Pests of Early Fall Planted Spinach in 1944

In several instances poor stands were obtained in the early fall plantings owing to dry weather immediately after seeding. Much of the early spinach was subjected to severe insect damage before an unseasonably late killing frost retarded the activity of the insects.

Two surveys were made of 37 plantings consisting of approximately 1,047 acres, during the latter part of November and again December 16 to December 24. The second survey was made to re-check the same area in order to determine the approximate date that the various diseases and pests became noticeable, since very few infected plants were observed during the first survey.

Downy Mildew was observed in 2 areas; and in each instance was causing very little reduction in the functional leaf tissue. These infected plantings were located in Crawford and Pulaski Counties.

Pin Head Rust or Leaf Spot was found in Mississippi, Pulaski, and Johnson Counties. In each instance where this disease was observed it was apparent that the plants had not been maintained in a vigorous state of growth.

Leaf Spots caused by Alternaria sp. and Cercospora sp. occurred on leaves injured by insect activity, causing further destruction of the leaf area. In most instances the infected leaves were rendered non-marketable. Plants infected by these organisms were observed in a single planting in Mississippi County and in a single planting in Johnson County. Both were seeded in late August and had been subjected to unfavorable growing conditions.

White Leaf (Frost Injury) caused severe damage to several plantings in the State. Young plantings were most severely injured, but one older planting near Osceola, Mississippi County, was considerably damaged by a heavy frost. The plants in this region were devitalized by insect activity and blight, thus rendering them more susceptible to freezing injury.

Blight. Early fall plantings of susceptible varieties were heavily damaged by spinach blight. Unseasonably late frosts permitted transmission of the virus by aphids from weed host reservoirs to the young spinach plantings over a period of approximately 2 months and heavy infections resulted. One field observed December 18 near Osceola in northeastern Arkansas showed from 40 to 60% of the plants infected. Near Little Rock the fields showed infections ranging from 4 to 30%. In the upper Arkansas River Valley infections were observed ranging from a trace to 40%. Plantings of the resistant Old Dominion variety showed traces of blight but damage was negligible. The contrast in appearance and prospective yields between these plantings of resistant varieties and other plantings of susceptible Bloomsdale types was striking.

Late fall plantings were not so heavily damaged. One field near Alma, planted in late October, was observed in mid-December and again in late January, 1945. No blight was observed in the field in December, but approximately 5% of the plants showed infection in January.

Preliminary transmission studies of the spinach blight virus were undertaken in the greenhouse in the fall and winter of 1944. Transmission by aphids was obtained from spinach to spinach, tobacco, and tomato. Mechanical inoculations were successful in transmitting the virus from spinach to spinach, tomato, and cucumber, also from tobacco to tobacco, tomato, cucumber, and spinach. The symptoms expressed on spinach, cucumber, tobacco, and tomato have been typical of those described for cucumber virus 1 in these hosts. Further study will be necessary before the possibility can be eliminated that other viruses are involved in the spinach blight disease as it occurs in Arkansas.

Insects played an important part in the reduction of the functional leaf tissue, as well as destroying entire plants in some instances. Heavy infestations of the following insects were detected during this period: Grubworms, Aphids, Twelve-spotted Cucumber Beetles, Tarnished Plant Bugs, Leafhoppers, and Seed Corn Maggot. The most severe damage resulted from the activity of grubworms, aphids, and seed corn maggot.

Grubworm Injury: The causal agent was identified by Dr. Charles Lincoln, Extension Entomologist, as the white grub. Plants attacked by the white grub usually wilt rapidly, turn yellow and die. The tap root in most instances was completely severed as a result of grubworm activity. White

grub injury was found in nearly every planting surveyed. The amount of loss varied from a trace to nearly 30% in the most severely infested areas.

Aphid Injury: The green peach aphid, in addition to the direct feeding injury it may cause, is active in the transmission of the spinach blight virus and for this reason is feared by growers. In the case of one large planting of a blight-susceptible Bloomsdale variety in Crawford County a severe infestation of the insect early in the growing season influenced the grower to plow under the entire 40-acre planting.

Budworm Injury: The Seed Corn Maggot caused considerable loss this season. Early infestations caused the center leaves to become dwarfed and compact. Yellowing of these central leaves along with the prostrate habit of affected plants made them conspicuous.

EMERERGENCY PLANT DISEASE PREVENTION PROJECT, AND
OKLAHOMA AGRICULTURAL EXPERIMENT STATION

POTATO LATE BLIGHT IN THE LOWER RIO GRANDE VALLEY OF TEXAS

Late blight (Phytophthora infestans), was found in fields in the southwestern portion of the Lower Rio Grande Valley, particularly that area bounded by Russeltown, Los Fresnos, and Brownsville. The infection was first noted about the last week of January. Wet weather the week of January 28 was favorable for the fungus and inspection of fields of December-planted potatoes the latter part of that week showed that the disease was present on occasional plants, widely separated in the fields. Fungicides were available in apparently adequate quantities, and rapid progress was being made in getting the material on the plants in affected fields. -- George E. Altstatt, Emergency Plant Disease Prevention Project.

VEGETABLE DISEASES IN WINTER TRUCK-GROWING REGIONS

ASTER YELLOWS IN CARROT IN LOUISIANA: An estimated 1% of the plants in a 2- to 3-acre field on the state prison farm at Angola showed typical symptoms of Aster Yellows (virus). This is the first time that the writer has observed this disease in carrots in Louisiana. -- Douglas C. Bain, Jan. 22.-Feb. 3

ASTER YELLOWS AND OTHER DISEASES OF CARROTS IN SOUTHERN TEXAS: Aster yellows (virus) continues to be the most prominent disease of carrots. The infection has not increased in the Winter Garden, but is spreading eastward from the Mission district of the Lower Valley, infected carrots and weeds being found as far east as Elsa. Percentages of plants infected is quite low.

Carrot blight (Macrosporium carotae) [Alternaria dauci] has decreased in prevalence in the Lower Valley and fields of young carrots are generally free of blight at this time.

Several fields of carrots near Carrizo Springs, in the Winter Garden, showed severe leaf spot damage due to Cercospora apii carotae [C. carotae]. This condition appeared to be localized to this area. -- George E. Altstatt, Jan. 15.-Feb. 15.

CERCOSPORA BLIGHT OF CARROT IN SOUTHERN CALIFORNIA: Cercospora Blight was found in only 2 fields, one in Ventura County, the other in the Santa Maria district in Santa Barbara County. Infection was severe in both fields. -- E. W. Bodine, week ending Jan. 20.

CELERY DISEASES IN CALIFORNIA: Late Blight (Septoria sp.) was general in the Salinas Valley in Central California, and was doing a slight amount of damage. -- Henry Schneider, Jan. 8-13.

Late Blight (Septoria apii) was found in all of the fields inspected in the Santa Maria and Guadalupe areas in Santa Barbara County in Southern California. Infection in most of the fields was light. In one field, however, heavy infection was present and causing considerable damage. Cottony Rot (Sclerotinia sclerotiorum) was noted in only a few plants in the Guadalupe district. No virus diseases were found in any of the fields inspected. -- E. W. Bodine, week ending Jan. 20.

CABBAGE DISEASES IN SOUTHERN TEXAS: Downy Mildew (Peronospora parasitica) was serious in many fields in the Lower Rio Grande Valley. The fungus was attacking the large outer leaves and the head, causing damage to the head. Powdery Mildew (Erysiphe polygoni) was present in the Valley and the Coastal Bend, but was not causing appreciable damage. -- George E. Altstatt, Jan. 15-Feb. 15.

"PINK CAULIFLOWER" AND CAULIFLOWER MOSAIC IN CENTRAL CALIFORNIA: For quick freezing it is necessary to discard heads that have a pink color. The color is presumably due to anthocyanin which turns blue-black in the processing. Some lots of cauliflower received at the quick-freezing plants in Santa Cruz County contain a fairly high percentage of such heads, which must be discarded. The problem is genetic in nature.

Cauliflower Mosaic (virus) affected 85% of the plants in the only cauliflower field observed in Monterey County, a 20-acre field near Salinas.--Henry Schneider, Jan. 8-13.

DISEASES OBSERVED ON CRUCIFERS IN SOUTHERN CALIFORNIA: Downy Mildew was present in slight amounts in all of the crucifer fields examined in Ventura and Santa Barbara Counties. Cottony Rot (Sclerotinia sclerotiorum) and Gray Mold Rot (Botrytis sp.) were found in trace amounts in one field of cabbage near Santa Maria. Mosaic (virus) on cauliflower was general in amounts ranging from a trace to 3% in most of the fields inspected in the Santa Maria, Guadalupe, Arroyo Grande, and Lompoc districts. Damage caused by mosaic, however, was slight.--E. W. Bodine, week ending Jan. 20.

DISEASES OF LETTUCE IN SOUTHERN TEXAS: A large field of lettuce near the Winter Haven Experiment Station that had shown Aster Yellows (virus) infection approximating 10% in December, showed considerable bolting. There appeared to be a relationship between bolting and yellows infection.

Drop caused by Sclerotinia sclerotiorum had killed 6% of the plants in a field near Santa Maria in the Lower Rio Grande Valley by February 7. -- George E. Altstatt, Jan. 15-Feb. 15.

DISEASES OF LETTUCE AND ENDIVE IN SOUTHERN CALIFORNIA: In general the lettuce diseases were causing very little loss in the area surveyed, in Ventura and Santa Barbara Counties. Drop was general in most of the fields inspected but usually was found in trace amounts. Gray Mold Rot (Botrytis cinera) was widespread but causing only a slight amount of damage. Downy

Mildew (Bremia lactucae) was general but infection was light in all of the fields examined. Aster Yellows was found in a few plants in the Arroyo Grande district. A trace of Mosaic (virus) was noted in one field in the Arroyo Grande district.

In one field of endive near Guadalupe, from 50 to 60% of the plants were infected with Sclerotinia sclerotiorum. In several other plantings visited only a trace of Drop was noted. A trace of Aster Yellows was found in one field near Santa Maria. -- E. W. Bodine, week ending Jan. 13.

ONION BLIGHT IN SOUTHERN TEXAS: The dying tips and white spots associated with onion "Blight" were common on onion plants at Weslaco, but less common in fields near Raymondville, in the Lower Rio Grande Valley. Symptoms were just beginning to appear in fields near Sodville, San Patricio County, where Blight has originated in the Coastal Bendarea. -- George E. Altstatt, Jan. 15-Feb. 15.

SHALLOT DISEASES IN LOUISIANA: On the State Prison Farm at Angola, a hundred or more acres of shallots are grown for "seed" to be distributed to growers in the New Orleans area. Angola appears to be an ideal location for this purpose because the Pink Root disease (Phoma terrestris) is conspicuous by its relative absence. The disease was found only in trace amounts. A trace of Yellow Dwarf (virus) was found. -- Douglas C. Bain, Jan. 22-Feb. 3.

DISEASES OF PEPPERS AND TOMATOES IN SOUTHERN TEXAS: It is the intention of some growers in the Lower Rio Grande Valley to hold over fall-grown Bell pepper plants, which have not been killed by frost, for early spring production of peppers. Examination of fields north of Mission with Dr. G. H. Godfrey of the Texas Agricultural Experiment Station at Weslaco revealed that many of the fields showed a high percentage of Mosaic (virus) infection. In one large acreage about 5 miles north of Mission Cercospora Leaf Spot (Cercospora capsici) was prevalent. This leaf spot was present in trace amounts in other fields in the Valley.

Traces of Early Blight (Alternaria solani) were noted on young tomato plants in the Lower Valley. One block of fall-grown plants which survived frosts showed extensive infection.--- George E. Altstatt, Jan. 15-Feb. 15.

PEPPER DISEASES IN SOUTHERN CALIFORNIA: In one field of peppers near Ventura, scattering plants were found affected with Verticillium albo-atrum. In another field a large number of plants were found showing symptoms of Wilt caused by Phytophthora capsici. -- E. W. Bodine, week ending Jan. 20.

SPINACH DISEASES IN SOUTHERN TEXAS: White Rust (Albugo occidentalis) is prevalent throughout the Winter Garden, Lower Rio Grande Valley, and Coastal Bend. Since December 24, White Rust has appeared in all fields of the Lower Valley. Prior to that date infection was found in only a few fields in the vicinity of Combes.

Blue Mold [Downy mildew] (Peronospora effusa) is also common to all spinach producing areas mentioned above. It is particularly active on very young spinach. -- George E. Altstatt, Jan. 15-Feb. 15.

CURLY TOP ON SPINACH IN CENTRAL CALIFORNIA: Onefield of spinach in Monterey County contained about 10% of stunted plants caused by the Curly Top virus. The virus was inoculated to beets by Dr. Henry H. P. Severin. -- Henry Schneider, Jan. 8-13.

DISEASES REPORTED ON MISCELLANEOUS VEGETABLE CROPS. Artichoke in Southern California: Light attack by Leaf Spot (Ramularia cynarae) was found in all fields inspected near Arroyo Grande and in the Guadalupe district. -- E. W. Bodine, week ending Jan. 20.

Garden Beets in Southern California: Only a trace of Rust (Uromyces betae) was found in the Lompoc and Buellton areas in Santa Barbara County. A trace of Downy Mildew (Peronospora schachtii) was noted in one field near Santa Maria. -- Bodine.

Parsley in Southern Texas: Stem Rot caused by Sclerotinia sclerotiorum was killing plants in a localized area near Edinburg in the Lower Rio Grande Valley. -- George E. Altstatt, Jan. 15-Feb. 15.

Peas in Southern California: One small planting of staked peas near Arroyo Grande was 100% infected with Pea Mosaic (pea virus 1). Several large plantings of peas along the coast in Santa Barbara County were found to be free from diseases at this time. -- Bodine.

DISEASES REPORTED ON POTATOES IN STORAGE

Reports are of the Emergency Plant Disease Prevention Project surveys.

OHIO: Potato storages in Morrow, Richland, Wayne, and Medina Counties (north-central Ohio) were visited during the period February 5 to 10. Temperatures have remained favorable for common storage of potatoes throughout January, consequently the sound tubers are of excellent quality. Some excessive sprouting was observed in a few lots of the varieties Chippewa and Sebago.

Fusarium Rots (Fusarium spp.) were causing from a trace to 2% loss. In the storage having the greatest loss from Fusarium Rots, excessive moisture resulting in condensation from the ceiling had already wet the upper foot or so of tubers in the bins. Common Scab (Actinomyces scabies) was present in all lots, ranging from a trace to 10% of the tubers showing lesions. Late Blight (Phytophthora infestans) tuber infection was very slight in this portion of the State, all lots examined having less than 1% of the tubers infected.

Bacterial Ringrot (Corynebacterium sepedonicum) was found in 3 of the 7 storages inspected. Several tubers showing the early stages were collected from each of the infected lots and the presence of the Ringrot organism was later determined by the Gram-stain technique. Approximately 1% of the Katahdin variety in 2 storages showed external symptoms of Ringrot. A third lot, also the Katahdin variety, showed external symptoms on 2% of the tubers. The grower had intended to use these potatoes for seed, but upon learning of the presence of the Ringrot organism in them decided to sell them for table stock. Practically all of the growers in this district are aware of the seriousness of the Ringrot disease and are anxious to take whatever precautions are necessary to prevent its development.

Black-heart (physiological) was developing in several lots of the variety Katahdin. In one storage approximately 2% of the tubers showed various degrees of injury.

The variety Katahdin is generally more seriously affected by tuber rots than are the other important varieties planted in this area; namely Russet Rural, Sebago, and Chippewa. -- Alvin J. Braun

IDAHO: Rather extensive survey of potato storages was made during the period December 11 to 23 in the territory including most of southeastern Idaho. Generally, Black Rot (Fusarium sp.) was present in all storages examined from a trace to extensive damage. Conservative estimates would indicate losses in some large cellars would reach 10% and in certain lots 25%. There seemed to be some indication that poor ventilation and excessive humidity increased the activity of black rot organisms. There was also good evidence that feather and scald injuries provided entrance sites. In some cases potatoes in parts of bins harvested on cold, windy days showed much more black rot than those harvested under favorable conditions.

In some cellars, leak (Pythium sp.), often called shell rot, was causing extensive damage. Bacterial ringrot was noted frequently. Scab was severe and in fact noted only in certain areas where the problem is increasing in importance. Very little vascular discoloration in tubers has been found.

January 28 to February 11 was devoted mostly to potato storage diseases in southern and southeastern Idaho from Gooding (Gooding County) to St. Anthony (Fremont County). Throughout the lower Snake River Valley Leak was commonly noted and often severe. In the upper Valley Black Rot was often very important. Water Rot (Phytophthora sp.) was noted in a few lots in the area around Newdale, St. Anthony, and Wendell.

Of particular interest is the record that in 43% (20 in 46) of the cellars examined, Bacterial Ringrot was noted. In a few cases the visible damage was considerable. This amount of Ringrot in areas and in cellars where seed stock relying largely on seed plots (one year out) is stored is a serious threat to clean seed stock. In some of these sections potatoes are planted so late in the season that normally there is not sufficient time nor high enough temperature for Ringrot to cause severe tuber breakdown in the field. The widespread occurrence but generally small amount of visible infection seems to bear out this theory, at least in part.

The incidence of Black Rot, as much as 20% in graded No. 2 potatoes in one case observed, raises an interesting question about this disease. These potatoes had been certified (hence certified seed was planted) and had been grown on land never before planted to potatoes, and yet black rot was very severe. So far as known this is a storage disease and no plant symptoms are recognized. Questions have been asked regarding the use of the stock for seed.

In some lots tubers have shown symptoms similar to those produced by Fusarium [solani f.] eumartii.

Rootknot nematode [Heterodera marioni] on potatoes has been observed on several lots; in general inspectors claim that this disease has spread considerably. -- Earle C. Blodgett.

APPLE STORAGE IN DELAWARE AND MARYLAND

A. J. Mix

Apple storages in Delaware and Maryland were visited during the period January 9 to February 8, 1945. Four of these were large commercial cold storages, handling other products as well as apples. They were cooled by

brine-circulation and had no special provision for ventilation. A fifth was similar but smaller, storing the crop of one grower. In this, at the grower's suggestion, fans had been installed, and outside air was used in ventilation. Two other storages of the same type were owned and operated by growers. These were provided with openings for ventilation from the outside. One of them was also equipped with fans, and when visited, was being cooled, as well as ventilated, by means of air drawn from the outside. An eighth storage, also owned by a grower, was cooled by air circulation, the air being drawn in over refrigerator-coils and forced throughout the storage-room. During cold weather the refrigerating system in this house was not operated, outside air being used for cooling. The ninth storage was a small farm-storage with no artificial refrigeration.

In all these storages but the last the temperature seemed to have been carefully regulated, and recording thermometers showed a recent steady line at or near 32° F. Measurement of humidity was not made.

The only disease found to be causing appreciable loss was blue-mold rot (Penicillium expansum). This was found present in the following percentages, given in the order in which the storages are mentioned: 2, 2, 2.5, 0.5, 4, 0.5, 1, 0.5, 7. The highest amount (7%) was found in the unrefrigerated farm-storage. In the storage in which the next highest amount (4%) occurred the apples were mostly No. 2 grade, or utility grade, the better fruit having been sold and shipped out. Storages in which ventilation was provided showed small amounts of Blue-mold rot (0.5% to 1%).

Other diseases were found only in trace-amounts. These were: black rot (Physalospora obtusa) in Black Twig, Delicious, and Golden Delicious; brown rot (Sclerotinia [Monilinia] fructicola) in Golden Delicious and York; scald (physiogenic) in Golden Delicious, Grimes Golden, Rome, and Stayman; bitter pit (physiogenic) in Grimes Golden; Jonathan spot (physiogenic) in Jonathan; scab (Venturia inequalis) in Black Twig, Gano, Delicious, Golden Delicious, Rome, Stayman, and York; storage-scab (V. inaequalis) in Black Twig, Delicious, Golden Delicious, Grimes Golden, Rome, and Stayman; spray-injury (russeting) in Golden Delicious, Grimes Golden, Gano, Rome and York.

A greater amount of "worm-sting" (codlin moth) was encountered than might be expected in apples graded U.S. No. 1.

In the storages discussed above apples were packed in bushel baskets, and to a small extent in boxes. An additional storage was visited in which some 13,000 bushels had been stored in the "Friday pack", a reinforced paper carton, in which the individual apples are nested in pressed-pulp trays, specially treated to prevent scald. The cartons had been closely piled and apparently insufficient care had been taken to bring the apples to a proper temperature early in the storage period. The result was "heating" from the respiration process and almost total loss. When the damage was discovered Dr. S. L. Hopperstead (of the Delaware Station) found the temperature within a carton to be 90° F.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

GREENHOUSE DISEASES OF ORNAMENTALS

Reports are of Emergency Plant Disease Prevention Project surveys

INDIANA: During the week ending December 9th, 1944, a survey for plant diseases in greenhouses in northern Indiana was made by Dr. C. T. Gregory, extension pathologist of the Purdue Agricultural Experiment Station, and the writer.

BEGONIAS with blotch (Botrytis cinerea) were observed in one greenhouse. Unless controlled, considerable loss may be expected as the plants were already unsightly.

Rust (Uromyces caryophyllinus) was present on CARNATIONS in several houses, King Cardinal and Seth Parker varieties, among others, being noted as moderately to very susceptible. Sulfur dust was being used to control this parasite. Mosaic (virus), causing mottling, stunting and a delay in bud development, was severe on Joan Marie and Olivet, 10% prevalence being noted in one greenhouse. Branch-rot (Alternaria dianthi) was present on carnations in one establishment at LaPorte. Several varieties, including Virginia, were very susceptible.

In one greenhouse at Warsaw, wilt (Verticillium sp.) was present as a trace on CHRYSANTHEMUMS. Leaf spot (Septoria chrysanthemella) was present on 10% of the chrysanthemums in another house at Middlebury, Indiana. Powdery mildew (Erysiphe cichoracearum) also occurred in varying amounts on different varieties in the same greenhouse.

Twenty-five percent of the CYCLAMENS in an Elkhart house were dying from the stunt disease (Cladosporium cyclaminis ?).

Outer leaves of PRIMROSES were chlorotic in several greenhouses and the trouble was diagnosed as magnesium deficiency.

Southwestern Indiana greenhouses were inspected by Dr. Gregory and the writer during the week ending February 10th.

The most serious disease of CARNATIONS encountered was Alternaria branch-rot. Lower leaves were generally infected in 7 houses in which this crop was grown. Intensity varied from light to severe and no doubt correlated with spray application and cultural practises. Rust was also present but was being held in check by sulfur application. Differences in varietal reaction were noted. Fusarium wilt (Fusarium sp.) occurred to the extent of 2% in 1 bench in a Vincennes house and was also encountered at Spencer. Mosaic was common in all houses but causing no harm. Yellows, a combination of mosaic and streak viruses, was present in 2 houses as a trace. Weak flower stems (physiological) was a common occurrence.

A wilt disease of CHRYSANTHEMUMS, probably caused by Verticillium dahliae (cultures are now in progress), was causing the death of 50 to 75% of the plants in some greenhouse beds at Huntingburg. The plants had been cut back and were dying from the base upward. Varietal differences in reaction were apparent.

Mineral deficiencies were making for chlorosis in GARDENIAS and PRIMROSES in 2 houses.

At Spencer, SWEET PEAS were badly infected with mosaic (virus), some varieties so severely so, they had been removed. Leaves and flowers showed the symptoms. Aphids were present. Excess soluble salts were responsible for slow and uneven growth of sweet peas in several houses further south in the State. -- J. S. Tidd

COLORADO: On November 8, 1944, in company with Mr. J. L. Forsberg, Assistant Pathologist and Prof. A. M. Binkley, Horticulturist, Colorado Experiment Station, a disease survey was made in several of the Denver greenhouses during the florist field day. The following diseases were observed:

Cladosporium cyclaminis (stunt) on CYCLAMEN was quite prevalent in one greenhouse.

Fusarium oxysporum f. dianthi (wilt), Alternaria dianthi (branch rot and leaf spot) and rust (Uromyces caryophyllinus) were found on CARNATION in small amounts in all greenhouses visited.

A few SNAPDRAGON plants in one greenhouse were found infected with a root rot (Rhizoctonia solani). -- E. W. Bodine

BRIEF NOTES ON DISEASES OF VARIOUS CROPS

PEACE ROOT TOXICITY IN A NEW YORK ORCHARD: In 1937 a New York grower was confronted with a problem in which numerous peach replants in an old sandy orchard soil, which had been growing peach trees continuously for about 50 years, refused to grow and become established. In an attempt to discover the cause of the failure, a careful examination of the dying replants on 8 successive years revealed the interplay of a number of factors including black peach aphids on the roots, Valsa canker, and old root toxicity. Since the trees were well fertilized and only occasional dying trees had their roots infested with black aphids or their trunks girdled by Valsa canker, it was concluded early that something present in the soil might be the real cause of the trouble.

When digging up the soil around the dying replants, remains of old tree roots were uncovered. A small quantity of this material was taken back to the laboratory for study, and included in a sand culture experiment then under way for studying the mineral deficiency symptoms on peach. The decomposing old roots were added to the sand in two 5-gallon crocks. Each crock was planted to 2 peach seedlings about 15 inches tall and received full nutrient solution. Two identical crocks minus the decomposing roots were held as checks. At the end of 3 months the seedlings grown in the crocks containing the old decomposing roots were definitely stunted but otherwise appeared healthy. Work on this phase of the problem was discontinued at this stage at about the time Proebsting and Gilmore (Proebsting, E.L. and Gilmore, A.E. The relation of peach root toxicity to the re-establishing of peach orchards. Proc. Amer. Soc. Hort. Sci. 38: 21-26. 1940) reported on the relation of peach root toxicity to the re-establishment of peach orchards in California.

Approximately 80% of the several hundred replants made in 1938 failed to survive. On each succeeding year, whereas occasional replants survived, the grower regularly replanted in all the locations where trees died--every precaution being taken to insure against drying out of the roots before planting. Despite the addition of manure, chemical fertilizers and the growing of a green manuring or other crop each summer, the sandy soil appeared to be able to make but slow progress in the correction of the trouble. Fortunately very few New York farms have light sandy soils like the above--at least this is the first case of peach tree mortality ever to be brought to the writer's attention where physiogenic or pathogenic disease appeared to play minor roles. -- E. M. Hildebrand

TIP BLIGHT AND COTTON BALL OF CRANBERRY IN WISCONSIN IN 1944: During the summer of 1944 the following observations were made in Wisconsin relative to Tip Blight and Cotton Ball of cranberry caused by Monilinia oxycocci.

Tip Blight was found on varieties of Vaccinium macrocarpon in portions of several beds in a marsh in Price County on June 15th and 22d. Conidia were being formed on affected uprights at this time. Bloom was initiated about June 15 and reached its peak on July 7th or 8th. On September 15 the Cotton Ball stage was found in small amount in these beds and during October in the milling process appeared as traces among the seconds.

At this same marsh V. oxycoccus bloomed somewhat earlier, the bloom being terminated by June 24th. The earlier blooming period appeared to favor infection and may account for heavier infection commonly found on this species.

In Wood County, inspection made during May and June 1944 of a marsh in which apothecia, overwintered mummied fruits, tip blight and cotton-ball had been found formerly (May to August, 1928), did not reveal any evidence of this pathogen or disease. It would appear that the disease is no longer present in this marsh.

A possible explanation for the absence of the disease in this Wood County marsh may rest with the fact that, during the intervening years, a drainage ditch on one end of the beds formerly subject to this disease had been widened and the beds sanded. Such cultural operations resulted in better drainage and the elimination of fern and moss and apparently also inhibited or eliminated the pathogen causing this disease. -- Edwin E. Honey and Henry F. Bain

DISEASES OF CEREAL CROPS IN SOUTHERN AND SOUTHWESTERN TEXAS: Crown rust (Puccinia coronata) of oats was present in Cameron, Nueces, Bee, and DeWitt Counites. Leaf rust of wheat (P. triticina) [P. rubigo-vera var. tritici] was observed in trial plots at Robstown, Nueces County, and at the Beeville Experiment Station in Bee County. Barley mildew (Erysiphe graminis) was doing slight damage at the Weslaco Station, and severe damage at Robstown and at the Beeville Station. Barley spot blotch (Helminthosporium sativum) was severe at the Beeville Station. -- George E. Altstatt, Emergency Plant Disease Prevention Project, Jan. 15-Feb. 15.

VERTICILLIUM WILT OF GUAYULE IN CALIFORNIA: A government owned field near Salinas was planted in the fall of 1942 with stock from a nursery area formerly managed by the Intercontinental Rubber Company. Approximately 50% of these plants were affected by Verticillium Wilt (Verticillium albo-atrum) when planted. In order to determine what happened to the diseased plants after 2 years a survey was made with Dr. Wm. A. Campbell. Of 25 plants that were diseased when planted, 16 showed a core of discolored wood and a wide ring of white wood in the tap root and are assumed to have recovered. In addition 9 of the plants showed discoloration of the new wood. Cultures were made from 3 of the recovered plants, and the fungus was isolated from one of them. Sections revealed mycelium in the vessels of the other 2 plants in the discolored core but none was present in the ring of white wood in any of the 3 plants. Apparently the mycelium was confined to the discolored wood and where still living was unable to invade the new wood. -- Henry Schneider, Emergency Plant Disease Prevention Project. -- Jan. 8-13.

SUMMARY OF THE MORE IMPORTANT PLANT DISEASES TAKEN IN CONNECTION WITH THE INSECT AND PLANT DISEASE SURVEY IN THE GENERAL VICINITY OF PORTS OF ENTRY FROM JULY 1944 TO DECEMBER 31, 1944

Compiled by W. S. Fields

The following diseases are listed as of possible interest to the Plant Disease Survey of the Bureau of Plant Industry, Soils and Agricultural Engineering:

Alternaria solani (Ell. & Mart.) Jones & Grout on leaves, fruit and stems of tomato, reported as a heavy and general infection during September 1944 at Troutdale, Oregon.

Ascochyta lycopersici Brun. on Datura stramonium (Jimson weed), Suavies Island, Oregon. Not reported by Seymour on this host species.

Cercospora sp. on Acacia sp., St. Simon, Ga. Nothing in this genus reported on this host by either Seymour or Weiss.

Cercospora sesami Zimm. on Sesamum indicum, Savannah, Georgia, and Levy, South Carolina.

Cercospora fici Heald & Wolf on Ficus repens, Brookgreen Gardens near Georgetown, South Carolina. No report of this Cercospora on this host species.

Cercospora fusimaculans Atk. on Panicum dichotomiflorum, Savannah, Georgia. This fungus not reported by Seymour or Saccardo on this host species.

Cercospora nandinae Nagatomo has been identified by Mr. J. A. Stevenson on Nandina domestica from Georgetown, South Carolina. One other collection of this fungus has been made in this country. See Plant Disease Reporter 24: 135, 1940.

Corticium microsclerotia (Matz) Weber was found on bean (Phaseolus vulgaris) at Shawboro, North Carolina. The first authentic report was on lima beans in Florida, July 1932. Apparently it has not been reported from North Carolina.

Colletotrichum fusarioides (Ell. & Kellerm.) O'Gara on Asclepias tuberosa, Plymouth, Virginia.

Cylindrosporium chrysanthemum Ell. & Dearn. on Chrysanthemum indicum in greenhouses at Moorestown, New Jersey and Wilmington, Delaware.

Elsinoë n. sp. was found causing a leaf spot on Cinnamomum camphora in January 1944. Two collections were made in the same month in the vicinity of Ocean Springs, Mississippi. The fungus was identified by Mrs. F. G. Heller and verified by Dr. A. E. Jenkins.

Another new species of Elsinoë with Sphaceloma stage was collected on Sesbania exaltata at Charleston, South Carolina and Levy, South Carolina, both during October 1943. Additional material was collected at Levy, South Carolina in December 1944. The fungus was identified by D. P. Limber and verified by Dr. A. E. Jenkins. The lesions occur on all parts of the plant above ground and judging from material examined causes serious injury to the plants.

Elsinoë sp. (published in literature as Myriangium sabelos Weedon) on Sabal palmetto (palmetto) was collected at Richmond Hill, Georgia in September 1943. Another specimen of the same fungus on the same host was found at Savannah, Georgia in December 1943.

Helminthosporium n. sp. on cowpea, Elizabeth City, North Carolina. A new fungus species is being published for this by D. C. Bain, L. S. Olive, and C. L. Lefebvre.

Isariopsis clavispora (Berk. & Curt.) Sacc. on Vitis sp., Newport News, Virginia, and on Vitis rotundifolia, Hertford, North Carolina.

Lethum australiense var. typicum (tomato spotted wilt virus, typical strain) on tomato, Lodi, California. This virus was identified by Drs. Gardner, Hansen, Thomas and Barnett of the University of California. Dr. Gardner states that this disease is known from the Lodi region but is not often found there.

Macrophoma sp. on Citrus limonia twigs, Redondo Beach, California. Miss E. K. Cash states that this fungus does not agree with species described on Citrus.

Macrophoma sp. and Septoria sp. were found on Carissa grandiflora, Santa Monica, California. Miss Cash who identified these fungi reports that nothing in either genus has been described on this host.

Marmor mali (apple mosaic virus) on apple, Napa, California, identified by W. H. Wheeler and by Dr. Thomas of the University of California.

A virus disease collected on Vicia faba (broad bean) at Colma, California, according to Dr. W. C. Snyder of the University of California, is possibly Marmor pisi (pea enation-mosaic virus).

Dr. W. C. Snyder identified what appears to be Marmor medicaginis (alfalfa-mosaic virus), collected on Pisum sativum (pea) at Belmont and San Francisco, California.

Phomopsis capsici (Magn.) Sacc. on Capsicum annuum, New Haven, Connecticut and New Milford, Connecticut. This may be a new report for that State.

Mycosphaerella lythracearum Wolf was found on pomegranate (Punica granatum) at Victoria, Texas.

Miss Cash identified as Phomopsis prunorum Grove a fungus found on plum seedlings (Prunus sp.) at Olympia, Washington.

Phyllachora ammophila Orton and Camarosporium metableticum Trail were found on Ammophila arenaria at Seaside Heights, New Jersey.

Mr. J. A. Stevenson identified a fungus collected at Richmond Hill, Georgia on Iva frutescens as Physalospora arthuriana Sacc. The host was identified by Dr. S. F. Blake.

A Phyllosticta sp. was collected on tung (Aleurites fordii) at Sapeloe Island, Georgia. The tree showed about 85% leaf infection. Another collection from the same locality showed 98% leaf infection.

Phyllosticta spermoides Peck was taken on Vitis rotundifolia at Camp Pendleton, Virginia.

Ramularia pastinacae (Karst.) Lindr. & Vester. on Pastinaca sativa (parsnip), Seaford, L. I., New York.

Septosporium heterosporum Ell. & Gall. on Vitis californica, St. Helena, California.

Sphaceloma rosarum (Pass.) Jenkins on Rosa sp. (stems), Tokeland, Washington. Fungus identified by Dr. A. E. Jenkins.

Sphaceloma n. sp. was identified by Dr. Jenkins on gooseberry (Ribes sp.) collected at Chinook, Washington, October 1943.

Sphaceloma symphoricarpi Barrus & Horsfall was found attacking 75% of the berries of a single bush of Symphoricarpus albus (Snowberry) at New London, Connecticut during September 1944.

Mr. J. A. Stevenson identified as Tryblidiella rufula (Spreng.) Sacc., a fungus on dead twig of Citrus nobilis unshiu (Satsuma) from Braithewaite, Louisiana.

Ustilago perennans Rost. was collected on Arrhenatherum sp. at Parkrose, Oregon.

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